Micro Focus Enterprise Test Server

Micro Focus Studio Enterprise Test Server is a testing suite that supports pre-production testing of mainframe applications on commodity Windows platforms before they are deployed back to the mainframe for production use.
OVERVIEW

Micro Focus Enterprise Test Server is a fast, scalable testing environment that enables organizations to perform substantial pre-production testing of IBM mainframe applications on more cost effective Windows servers, while still deploying these back to the mainframe for final system test and release into production.

Enterprise Test Server is a multi-tasking, multi-user transactional and batch testing platform that supports IBM COBOL, IBM Assembler, IBM CICS, IBM IMS (TM and DB) and IBM JCL, IBM DB2, IBM z/OS file formats and SORT utilities on Windows. This means that substantial and complex mainframe applications can be comprehensively tested under Enterprise Test Server without being constrained by the availability of mainframe resources.

Enterprise Test Server when combined with Enterprise Developer provides an environment where mainframe programs can be compiled and then executed off the mainframe. Test Server can also be configured to allow code and data, where logical, to continue to reside on the mainframe and be executed remotely.

BENEFITS

- Complete testing phases faster and with high quality as test cycles are not constrained by scarce mainframe processing power
- Scale up test capacity quickly to meet business driven deadlines or significant business change such as mergers and acquisitions
- Reduce mainframe MIPS consumption as more testing is performed off mainframe on Enterprise Test Server
- Identify issues sooner in the development cycle and reduce costly rework
- Improve quality as more thorough testing can be accomplished in shorter time frames
- Discover issues that impact batch or online system performance through benchmark testing of application performance under Enterprise Test Server
- Accelerate innovation by providing Java or .NET programmers and quality assurance teams with a more responsive and accessible environment to perform testing against
- Pave the way for future off-mainframe deployment

COMPREHENSIVE MAINFRAME APPLICATION COMPATIBILITY

A wide breadth of mainframe compatibility is instrumental in ensuring that pre-production testing can be performed off the mainframe. Micro Focus has been evolving its workstation-based development tools for 30 years. The result is an unsurpassed level of compatibility for maintaining and testing IBM mainframe applications that include COBOL, Assembler, CICS, IMS TM, SQL, IMS DB, VSAM, and JCL executing in an EBCDIC run-time environment.

Mature mainframe COBOL execution support

Enterprise Test Server provides a comprehensive test execution environment for testing COBOL applications written in a number of IBM COBOL dialects including OSVS, VSC2, COB370 and Enterprise COBOL. This extensive compatibility ensures the COBOL business logic and file I/O code compiled under Enterprise Developer will behave as it does on the mainframe when executed under Enterprise Test Server.

High Level Assembler execution support

Enterprise Test Server supports IBM High Level Assembler. This means that mainframe programs or sub-routines written in Assembler, compiled and linked under Enterprise Developer are then available for pre-production testing under Enterprise Test Server.

Online application – CICS and IMS transaction system support

Enterprise Test Server provides a comprehensive environment that delivers testing support for online CICS or IMS applications. This means transaction processing logic, user interface and screen interactions for online CICS or IMS applications behave exactly as they did on the mainframe. As a result existing test scripts or automated tests can be reused.
Batch application and JCL support

Batch processing forms a key element of mainframe systems and the Job Control Language (JCL) within these applications is often more than just a method for executing programs. It helps define the relationship between components of a system and important application logic can be contained within Job Control scripts. Enterprise Test Server provides a robust Job Execution System (JES) engine for the submission, prioritization and execution of batch initiators that supports both MVS (z/OS) and VSE JCL.

This allows mainframe JCL to be submitted and run under Enterprise Test Server. Emulation of key utilities such as DFSORT, ICEGENER, IDCAMS, IEBGENER, IKJEFT01 and support for Job Control statements such as JOB CARD, DISP, DSN, OUTPUT etc. mean that the JCL can be run with minimal or no change.

DATA ACCESS CAPABILITIES AND DATABASE SUPPORT

Comprehensive mainframe data file options

Enterprise Test Server supports the mainframe VSAM file types (KSDS, RRDS and ESDS), as well as Partitioned Datasets (PDSs) and Generation Dataset Groups (GDGs). Data files can be downloaded from the mainframe and automatically added into the Test Server Catalog. No data conversion is required; files remain in their native EBCDIC code set. This is vital to ensure that COBOL applications behave in the same manner when run under Enterprise Test Server and that the results of the testing are the same as the mainframe.

Where it makes sense, for example with large reference, archived or sensitive information, data can remain on the mainframe and be accessed directly from COBOL programs executing under Enterprise Test Server. This provides flexibility especially when configuring a number of separate test regions to execute against different test data whether it resides on the server or the mainframe.

Comprehensive mainframe data file editing capabilities are supplied with Enterprise Test Server. Data files can be viewed and updated through a graphical interface in native EBCDIC. Records can be viewed based on the file record layout. This allows easy updating of test data when forcing particular test conditions or scenarios.

IMS DB support

Enterprise Test Server includes support for IMS DB. Therefore, COBOL and Assembler applications that access IMS databases can be tested without change. IMS support within Enterprise Test Server includes:

- Support for COBOL and Assembler applications using either language dependent or language independent API interfaces
- A rich set of system definition and database management facilities is also provided including:
  - Database schema (DBDGEN, PSBGEN) compilation within the IDE
  - Utilities to unload, reload and reorganize databases
  - Database editing and database recovery tooling
  - Database application tracing tools

DB2 support

DB2 is supported in Enterprise Test Server through the SQL Option for DB2. COBOL applications which access DB2 data can be tested without change. The DB2 support within Enterprise Test Server includes:

- Support for testing COBOL stored procedures in DB2
- A Windows-based database server engine that performs all database operations and emulates a DB2 system under Enterprise Test Server. Data is maintained in EBCDIC and the database behaves exactly like a mainframe DB2 equivalent
- A rich set of system definition and database management facilities is also provided including:
  - An import function to load data downloaded from IBM DB2 database using the IBM DSNUTILB facilities.
  - Utilities to LOAD, UNLOAD and reorganize databases
  - Database editing and database recovery tooling
SQL Option for DB2 enables DB2 data to be configured and managed within different test regions to:

- Maintain a complete copy or a subset of mainframe test data on a shared database server running on Windows
- Create different subsets of mainframe data based on the testing requirements for the test cycle being performed
- Directly access mainframe based DB2 data from COBOL applications running under Test Server. This ensures that large, static data can be maintained and accessed directly on the mainframe if required

**Close integration into the mainframe environment**

Enterprise Test Server includes direct mainframe access capabilities. Mainframe code and data can remain on the mainframe and accessed from within the Enterprise Test Server environment. While it may be desirable to move as much pre-production testing to a rehosted testing environment, there are often good reasons to leave components on the mainframe. For example:

- The application being tested accesses programs or sub-module where no code exists. In this case the application cannot be compiled and run under Enterprise Test Server
- Data protection issues mean it is not possible to migrate data away from the mainframe platform
- Well defined and managed approaches to source control on the mainframe dictate synchronization with these systems when building load modules for execution under Enterprise Test Server

To ensure maximum flexibility in the set up and deployment of test regions, Enterprise Test Server includes the following functionality:

- Seamless but secure access to mainframe application source code and data resources. Using a drag and drop interface mainframe source and data can be moved quickly into testing projects. This simplifies set up and deployment of the Enterprise Test Server platform.
- Automated source synchronization between mainframe and LAN development libraries, including access to common host configuration management systems such as CA-Endevor, Panvalet and Serena ChangeMan ZMF. This allows:
  - mainframe source control systems to continue to control and manage access to sources and the drive the development lifecycle
  - Enterprise Test Server to automatically compile changes as they are checked into source libraries. This ensures that a continuous integration test environment can be maintained and kept up to date with development changes, and provides early exposure to test teams performing smoke testing or regression testing on new releases.
- Execution of applications directly on the mainframe from within the Enterprise Test Server. This can be through:
  - Remote Job Step Execution that allows job steps in JCL to be executed directly on the mainframe even when the JCL is executed under Enterprise Test Server. The results of the remote step are then automatically available for later steps in the batch run.
  - COBOL calls to programs or sub-routines that reside on the mainframe. Enterprise Test Server provides functionality to automatically manage these calls passing and retrieving linkage items as appropriate.
  - Data can continue to reside on the mainframe. COBOL programs running under Test Server can directly access data files hosted on the mainframe using normal I/O commands. This is achieved by a simple configuration to the Enterprise Test Server catalog, pointing this to the mainframe data file rather a file residing on Windows. This allows multiple test levels especially for incremental testing against different test data sets.

**INTEGRATION TEST PLATFORM**

By providing a Windows based pre-production mainframe testing environment, Enterprise Test Server can be used as an integration test harness for distributed applications that access mainframe resources such as CICS, IMS or batch applications and associated data. Non-COBOL programmers developing these applications can perform integration testing initially against Enterprise Test Server before being tested again the mainframe prior to deployment.

Enterprise Test Server supports the main communication protocols used to work with z/OS mainframes such as CICS Universal Client / CICS Transaction Gateway, IMS Connect, IMS OTMA, MQ Series and EZASoket for CICS.
HIGH PERFORMANCE AND SCALABLE TEST ENGINE

Enterprise Test Server is built on the same Micro Focus Enterprise Server product used by hundreds of customers who have migrated mainframe applications to lower cost platforms.

Enterprise Server provides a high performance server for COBOL applications and CICS/IMS transactions and services. The architecture enables multiple concurrent tasks to execute, providing UOW (Unit of Work) integrity, which enables multiple applications to access and update the same resources. These capabilities support record level file locking, lock contention management, deadlock detection and resolution.

A single Enterprise Server image provides support for high numbers of concurrent clients and workload without the need to replicate the environment into separate servers. Dynamic system administration allows the Enterprise Server configuration to be updated ‘in flight’ to support variations in workload.

The CICS, JES, and IMS emulation integrates with a security layer, the External Security Facility or ESF, which is based on mainframe SAF and RACF. ESF uses plug-in security managers to control user authentication and resource access; the most feature-rich manager uses an LDAP server such as Active Directory or OpenLDAP. With ESF, the emulated mainframe environments support mainframe-style user login and resource access control. This can be used to protect sensitive parts of an application where access is limited to certain members of the QA team.

By incorporating these capabilities into Enterprise Test Server, customers can extend testing across the development life-cycle from unit to functional, user acceptance and system testing. This not only maximizes test throughput, it also provides a degree of flexibility and control that is not possible when testing on the mainframe alone.

KEY FACTORS IN SUCCESSFUL PRE-PRODUCTION TESTING

Efficient and effective pre-production testing is a key factor in:

- Shortening test cycles
- Finding errors early
- Reducing the risk of costly production failures.

When pre-production testing can be performed on a lower cost commodity platform like Windows, significant cost savings can be realized and a level of pre-production testing achieved that is often just not possible on the mainframe. Critical factors to consider when rehosting pre-production testing are:

- Comprehensive language support to ensure that mainframe COBOL and Assembler applications can run on the test platform with a very high degree of compatibility
- Support for mainframe sub systems so that online and batch applications remain intact in a multi-user environment
- Rich data access facilities and mainframe database support to allow data to be hosted either on the pre-production test environment or to continue to reside on the mainframe
- Mainframe connectivity to provide the flexibility to enable core components of the system to continue to reside on the mainframe, where required
- Flexibility in configuring the test environment to ensure that multiple regions can easily be created and maintained to support different levels of testing by different teams
- A black box environment to allow non-mainframe JAVA or .NET programmers to develop and test integrations with mainframe host systems
- Robust run time capabilities to provide the reliability and scalability to support a multi-user, multi-level test environment
PROFESSIONAL SERVICES

Micro Focus provides a range of professional services to work with internal teams to set up the most efficient processes to help:

▷ Efficiently download source from z/OS and set up appropriate synchronization points back to source control systems on the mainframe
▷ If required, set up remote access to mainframe programs or data that cannot be moved to the Windows environment
▷ Devise appropriate test data by creating efficient and secure subsets of test or production data residing on the mainframe
▷ Automatically compile and initiate execution within the Enterprise Test Server JES, CICS and IMS TM engines
▷ Define and implement different testing regions to support multiple testing levels (unit, functional, system, user acceptance etc)

MARKET LEADING PRODUCT SUPPORT

Customers need to be assured of the long-term viability of any enterprise software vendor and its ability to deliver the level of product support required to meet appropriate Service Level Agreements.

SupportLine, Micro Focus’ award winning product support organization, operates through in-house SupportLine centers in North America, UK, France, Germany, Japan and Australia.

Skilled engineers provide technical support 24 hours a day, 7 days a week, 365 days a year via telephone, e-mail and the Internet. In addition, the SupportLine website provides on-line incident reporting and tracking, along with the latest product downloads, a Google searchable knowledge base, code samples, and full product documentation.

TECHNICAL SPECIFICATIONS

Recommended Windows Operating System requirements

▷ Windows 7 or Windows Server 2008